select \* from Programmer

select \* from Studies

select \* from Software

--Problem Statement:

-- Complete the below tasks using the Table – STUDIES, SOFTWARE and PROGRAMMER

-- Tasks To Be Performed:

-- 1. Find out the selling cost average for packages developed in Pascal.

select avg(scost) AVG\_SCOST from software

where developin='Pascal'

--2. Display the names and ages of all programmers.

select pname, datediff(year,dob,'2025-2-4') as age from programmer

--3. Display the names of those who have done the DAP Course.

select pname, course from studies where course='DAP'

--4. Display the names and date of birth of all programmers born in January.

select pname, dob from programmer where month(dob)=1

--5. What is the highest number of copies sold by a package?

select max(SOLD) as Highest\_no\_copies\_Sold from software

--6. Display lowest course fee.

select min(course\_fee) Lowest\_course\_Fees from studies

--7. How many programmers have done the PGDCA Course?

select count(distinct pname) as PGDCA\_Count from studies where course='PGDCA'

--8. How much revenue has been earned through sales of packages developed in C?

select sum(scost \* sold) as Total\_Revenue from software where developin='c'

--9. Display the details of the software developed by Ramesh.

select \* from software where pname='Ramesh'

--10. How many programmers studied at Sabhari?

select count(pname) as No\_Sabhari from studies where institute='sabhari'

--11. Display details of packages whose sales crossed the 2000 mark.

select \* from software where (scost\*sold) > 2000

--12. Display the details of packages for which development costs have been recovered.

select \* from software where (scost\*sold) > dcost

--13. What is the cost of the costliest software development in Basic?

select max(scost+dcost) Costliest\_software\_cost from software

--14. How many packages have been developed in dBase?

select count(developin) no\_of\_DBASE from software where developin='dbase'

--15. How many programmers studied in Pragathi?

select count(Pname) as Pragati\_Programmers from studies where institute='Pragathi'

--16. How many programmers paid 5000 to 10000 for their course?

select count(pname) as Count\_Programmers from studies where course\_fee between 4999 and 10000

--17. What is the average course fee?

select avg(course\_fee) as Average\_Course\_Fee from studies

--18. Display the details of the programmers knowing C.

select \* from programmer where prof1='c' or prof2='c'

--19. How many programmers know either COBOL or Pascal?

select count(PNAME) as no\_of\_programmers from programmer where (prof1='cobol' or prof1='pascal') or (prof2='cobol' or prof2='pascal')

--20. How many programmers don’t know Pascal and C?

select count(PNAME) as count from Programmer where (PROF1<>'Cobol' and PROF1<>'pascal') and

PROF2<>'Cobol' and PROF2<>'pascal'

--21. How old is the oldest male programmer?

select \* from programmer

select top 1 datediff(year,dob,'2025-2-4') as age from programmer

where gender='m'

order by age desc -- should paste datediff(year,dob,'2025-2-4') in place of age in order by line to have accurate results sometimes it might not recognize the aggregation alias

--22. What is the average age of female programmers?

select avg(datediff(year,dob,'2025-2-4')) as avg\_f\_age from programmer

where gender='f'

--23. Calculate the experience in years for each programmer and display with their names in descending order.

select Pname, datediff(year,doj,'2025-2-4') as Experience from programmer

--24. Who are the programmers who celebrate their birthdays during the current month?

select Pname from programmer

where month(dob)=4

--25. How many female programmers are there?

select count(pname) as no\_of\_f from programmer

where gender='f' --use distinct function with count if you feel in any column rows value will be repeated, count(distinct column\_name)

--26. What are the languages studied by male programmers?

select prof1, prof2 from programmer where gender ='m'

--27. What is the average salary?

select avg(salary) avg\_salary from programmer

--28. How many people draw a salary between 2000 to 4000?

select count(pname) as no\_people from programmer where salary between 2000 and 4000

--29. Display the details of those who don’t know Clipper, COBOL or Pascal.

select \* from programmer where (prof1<>'clipper' and prof2<>'clipper') and (prof1<>'cobol' and prof2<>'cobol') and (prof1<>'pascal' and prof2<>'pascal')

--30. Display the cost of packages developed by each programmer.

select pname,developin, dcost from software

--31. Display the sales value of the packages developed by each programmer.

select Pname, (SCOST\*SOLD) as sales\_value from Software

--32. Display the number of packages sold by each programmer.

select pname, sum(sold) total\_packages from software

group by pname

--33. Display the sales cost of the packages developed by each programmer language wise.

select pname, developin, scost from software

group by pname,developin, scost

--34. Display each language name with the average development cost, average selling cost and average price per copy.

select developin,

avg(dcost) average\_development\_cost,

avg(scost) average\_selling\_cost,

avg(scost+dcost) average\_price

from software

group by developin

--35. Display each programmer’s name and the costliest and cheapest packages developed by him or her.

select pname, max(scost+dcost) costliest, min(scost+dcost) cheapest from software

group by pname

--36. Display each institute’s name with the number of courses and the average cost per course.

select institute, count(course) no\_of\_courses, avg(course\_fee) avg\_fee from studies

group by institute

--37. Display each institute’s name with the number of students.

select institute, count(pname) no\_of\_students from studies

group by institute

--38. Display names of male and female programmers along with their gender.

select pname, gender from programmer

--39. Display the name of programmers and their packages.

select pname, title from software

group by pname, title

--40. Display the number of packages in each language except C and C++.

select developin, (sold) as no\_packages from software

where developin<>'c' and developin<>'cpp'

-- wasn't quite sure what number of packages mean here so i derived it with sold numbers and number titles developed with them as well. if you find correct one please do let me know

select developin, count(title) as no\_packages from software

where developin<>'c' and developin<>'cpp'

group by developin

--41. Display the number of packages in each language for which development cost is less than 1000.

select developin, count(title) no\_packages from software

where dcost<1000

group by developin

--again not sure what number of packages denote, take help from chat gpt if requires

--42. Display the average difference between SCOST and DCOST for each package.

select title, avg(dcost-scost) as avg\_difference from software

group by title

--43. Display the total SCOST, DCOST and the amount to be recovered for each programmer whose cost has not yet been recovered.

select pname, scost, dcost, ((dcost+scost)-(scost\*sold)) as Amount\_to\_recover from software

where (dcost+scost)>=(scost\*sold)

--44. Display the highest, lowest and average salaries for those earning more than 2000.

select max(salary) Highest, min(salary) lowest, avg(salary)avg\_salary from programmer

where salary>2000

--45. Who is the highest paid C programmer?

select top 1 pname from programmer

order by salary desc

select \* from programmer

--46. Who is the highest paid female COBOL programmer?

select top 1 pname from programmer where (prof1='cobol' or prof2='cobol') and gender='f'

order by salary desc

--47. Display the names of the highest paid programmers for each language.

select top 1 pname from programmer

group by prof1, prof2

order by salary desc

--48. Who is the least experienced programmer?

select top 1 pname, datediff(year,doj,'2025-4-3') as experience from programmer

order by experience asc

--49. Who is the most experienced male programmer knowing PASCAL?

select top 1 pname, datediff(year,doj,'2025-4-3') as experience from programmer

where gender='m' and ('pascal' in (prof1,prof2))

order by experience desc

--50. Which language is known by only one programmer?

select language from(select prof1 as language from programmer

union all select prof2 from programmer) as all\_languages

group by language

having count(\*)=1

select \* from programmer

--51. Who is the above programmer referred in 50?

SELECT PNAME

FROM programmer

WHERE PROF1 IN (

SELECT language

FROM (

SELECT PROF1 AS language FROM programmer

UNION ALL

SELECT PROF2 FROM programmer

) AS all\_languages

GROUP BY language

HAVING COUNT(\*) = 1

)

OR PROF2 IN (

SELECT language

FROM (

SELECT PROF1 AS language FROM programmer

UNION ALL

SELECT PROF2 FROM programmer

) AS all\_languages

GROUP BY language

HAVING COUNT(\*) = 1

);

--52. Who is the youngest programmer knowing dBase?

select top 1 pname, datediff(year,dob,'2025-4-3') as age from programmer

where ('dbase' in (prof1,prof2))

order by age asc

--53. Which female programmer earning more than 3000 does not know C, C++, Oracle or dBase?

select pname from programmer where gender='f'

and prof1 not in ('c','cpp','oracle','dbase')

and prof2 not in ('c','cpp','oracle','dbase')

and salary>3000

--54. Which institute has the most number of students?

select top 1 institute, (count(pname)) as no\_stud from studies

group by institute

order by no\_stud desc

--55. What is the costliest course?

select max(course\_fee) as fee from studies

--56. Which course has been done by the most number of students?

select top 1 course,count(pname) as no\_of\_students from studies

group by course

order by no\_of\_students desc

--57. Which institute conducts the costliest course?

select top 1 institute from studies

order by course\_fee desc

--58. Display the name of the institute and the course which has below average course fee.

select institute, course from studies

where course\_fee<(select avg(course\_fee) from studies)

--59. Display the names of the courses whose fees are within 1000 (+ or -) of the average fee.

select course from studies

where course\_fee<((select avg(course\_fee) from studies)+1000)

and course\_fee>((select avg(course\_fee) from studies)-1000)

--60. Which package has the highest development cost?

select top 1 title from software

order by dcost desc

--61. Which course has below average number of students?

select course from studies

group by course

having cast(count(pname) as float) < (select avg(student\_count) from (select count(pname) student\_count from studies group by course) as subquery)

WITH course\_counts AS (

SELECT course, COUNT(pname) AS student\_count

FROM studies

GROUP BY course

),

avg\_count AS (

SELECT AVG(CAST(student\_count AS FLOAT)) AS avg\_students

FROM course\_counts

)

SELECT course

FROM course\_counts, avg\_count

WHERE course\_counts.student\_count < avg\_count.avg\_students;

--62. Which package has the lowest selling cost?

select top 1 title from software

order by scost asc

--63. Who developed the package that has sold the least number of copies?

select top 1 pname from software

order by sold asc

--64. Which language has been used to develop the package which has the highest sales amount?

select top 1 developin from software

order by scost desc

--65. How many copies of the package that has the least difference between development and selling cost were sold?

select top 1 sold, title, pname, (scost-dcost) as difference\_scost\_dcost from software

order by (dcost-scost) asc

select \* from software

--66. Which is the costliest package developed in Pascal?

select top 1 title from software where developin='pascal'

order by (scost+dcost) desc

--67. Which language was used to develop the most number of packages?

select top 1 developin from software

order by sold desc

--68. Which programmer has developed the highest number of packages?

select top 1 pname from software

order by sold desc

--69. Who is the author of the costliest package?

select top 1 pname, title from software

order by (scost+dcost) desc

--70. Display the names of the packages which have sold less than the average number of copies.

with no\_of\_copies as

(select sum(sold) sold\_count, title from software group by title),

average as (select avg(cast(sold\_count as float)) avg\_sold from no\_of\_copies)

select title from no\_of\_copies,average

where no\_of\_copies.sold\_count<average.avg\_sold

WITH no\_of\_copies AS (

SELECT title, SUM(sold) AS sold\_count

FROM software

GROUP BY title

),

average AS (

SELECT AVG(CAST(sold\_count AS FLOAT)) AS avg\_sold

FROM no\_of\_copies

)

SELECT title

FROM no\_of\_copies

CROSS JOIN average

WHERE no\_of\_copies.sold\_count < average.avg\_sold;

--71. Who are the authors of the packages which have recovered more than double the development cost?

with recover

as (select (scost\*sold) as amt from Software group by PNAME),dev\_cost as (select (2\*dcost) as deecost from Software group by pname)

select pname from recover,dev\_cost

where recover.amt>dev\_cost.deecost

WITH recover AS (

SELECT PNAME, (scost \* sold) AS amt

FROM Software

),

dev\_cost AS (

SELECT PNAME, (2 \* dcost) AS deecost

FROM Software

)

SELECT r.PNAME

FROM recover r

JOIN dev\_cost d ON r.PNAME = d.PNAME -- Corrected JOIN condition

WHERE r.amt > d.deecost;

--72. Display the programmer names and the cheapest packages developed by them in each language.

select \* from software

select pname, min(scost+dcost) as cheapest\_package from software

group by pname

--73. Display the language used by each programmer to develop the highest selling and lowest selling package.

WITH SalesRank AS (

SELECT

PNAME,

TITLE,

DEVELOPIN,

SOLD,

RANK() OVER (PARTITION BY PNAME ORDER BY SOLD DESC) AS HighRank,

RANK() OVER (PARTITION BY PNAME ORDER BY SOLD ASC) AS LowRank

FROM software

)

SELECT PNAME, TITLE, DEVELOPIN, SOLD,

CASE WHEN HighRank = 1 THEN 'Highest Selling'

WHEN LowRank = 1 THEN 'Lowest Selling'

END AS SaleType

FROM SalesRank

WHERE HighRank = 1 OR LowRank = 1

ORDER BY PNAME, SaleType DESC;

--74. Who is the youngest male programmer born in 1965?

select top 1 pname,dob from programmer where gender='m' and year(dob)='1965'

order by dob asc

--75. Who is the oldest female programmer who joined in 1992?

select top 1 pname, doj from programmer where gender='f' and year(doj)='1992'

order by dob desc

--76. In which year was the most number of programmers born?

select top 1 year(dob) year\_dob, count(pname) as no\_programmers from programmer

group by year(dob)

order by no\_programmers desc

--77. In which month did the most number of programmers join?

select top 1 month(doj) month\_doj, count(pname) as no\_programmers from programmer

group by month(doj)

order by no\_programmers desc

--78. In which language are most of the programmer’s proficient?

select top 1 prof1, count(pname) as no\_programmers from (select pname, prof1 from programmer union select pname,prof2 from programmer) as tab

group by prof1

order by no\_programmers desc

--79. Who are the male programmers earning below the average salary of female programmers?

select pname from programmer where salary<(select AVG(salary) as av from Programmer where gender='f') and gender='m'

--80. Who are the female programmers earning more than the highest paid? may be asking male

select pname from programmer where gender='f' and salary>(select top 1 salary from programmer where gender='m' order by salary desc)

--81. Which language has been stated as the proficiency by most of the programmers?

select top 1 prof1, count(pname) as no\_programmers from (select pname, prof1 from programmer union select pname,prof2 from programmer) as tab

group by prof1

order by no\_programmers desc

--82. Display the details of those who are drawing the same salary.

SELECT \*

FROM programmer

WHERE salary IN (

SELECT salary

FROM programmer

GROUP BY salary

HAVING COUNT(\*) > 1

);

--83. Display the details of the software developed by the male programmers earning more than 3000.

select \* from software s

join programmer p

on p.pname=s.pname

where salary>3000 and gender='m'

--84. Display the details of the packages developed in Pascal by the female programmers.

select \* from software s

join programmer p

on p.pname=s.pname

where gender='f' and developin='pascal'

--85. Display the details of the programmers who joined before 1990.

select \* from programmer

where year(doj)<1990

--86. Display the details of the software developed in C by the female programmers at Pragathi.

select \* from software s

join studies st

on st.pname=s.pname

join programmer p

on p.pname=s.pname

where developin='c' and gender='f' and institute='pragathi'

--87. Display the number of packages, number of copies sold and sales value of each programmer institute wise.

select s.pname, st.institute, count(s.title) no\_packages, sum(s.sold) copies\_sold, sum(scost\*sold) sales\_value from studies st

join software s

on s.pname=st.pname

group by st.institute, s.pname

--88. Display the details of the software developed in dBase by male programmers who belong to the institute in which the most number of programmers studied.

select \* from Software s

join Programmer p

on p.PNAME=s.PNAME

join Studies st

on st.PNAME=s.PNAME

where p.GENDER='m' and DEVELOPIN='dbase'

and institute=(select top 1 institute from Studies group by INSTITUTE order by count(pname) desc)

WITH institute\_populous AS (

SELECT TOP 1 institute

FROM studies

GROUP BY institute

ORDER BY COUNT(pname) DESC

),

m\_programmer AS (

SELECT DISTINCT s.pname

FROM software s

JOIN programmer p ON s.pname = p.pname

WHERE p.gender = 'M'

)

SELECT sw.\*

FROM software sw

JOIN studies st ON sw.pname = st.pname

JOIN institute\_populous ip ON st.institute = ip.institute

JOIN m\_programmer mp ON sw.pname = mp.pname

WHERE sw.developin = 'DBASE';

--89. Display the details of the software developed by the male programmers born before 1965 and female programmers born after 1975.

with male\_programmers as (select pname from Programmer where gender='m' and year(dob)<1965),

female\_programmers as (select pname from Programmer where gender='f' and year(dob)>1975)

select s.\* from software s

join male\_programmers mp on mp.pname=s.pname

join female\_programmers fp on fp.pname=s.pname

where pname in (male\_programmers,female\_programmers)

WITH male\_programmers AS (

SELECT pname

FROM Programmer

WHERE gender = 'M' AND YEAR(dob) < 1965

),

female\_programmers AS (

SELECT pname

FROM Programmer

WHERE gender = 'F' AND YEAR(dob) > 1975

),

target\_programmers AS (

SELECT pname FROM male\_programmers

UNION

SELECT pname FROM female\_programmers

)

SELECT s.\*

FROM Software s

JOIN target\_programmers tp ON s.pname = tp.pname;

--90. Display the details of the software that has been developed in the language which is neither the first nor the second proficiency of the programmers.

select \* from software s

join programmer p on p.pname=s.pname

where developin<>prof1 and developin<>prof2

--91. Display the details of the software developed by the male students at Sabhari.

select \* from software s

join programmer p on p.pname=s.pname

join studies st on st.pname=s.pname

where gender='m' and institute='sabhari'

--92. Display the names of the programmers who have not developed any packages.

select p.pname from programmer p

left join software s on s.pname=p.pname

where s.pname is null

--93. What is the total cost of the software developed by the programmers of Apple?

select s.pname, Title, (dcost+scost) as Total\_cost from software s

join studies st on st.pname=s.pname

where institute='apple'

--94. Who are the programmers who joined on the same day?

SELECT p1.pname, p1.doj

FROM Programmer p1

JOIN (

SELECT doj

FROM Programmer

GROUP BY doj

HAVING COUNT(\*) > 1

) p2 ON p1.doj = p2.doj

ORDER BY p1.doj;

--95. Who are the programmers who have the same Prof2?

select pname, p.prof2 from programmer p

join (select prof2 from programmer group by prof2 having count(\*)>1) p1

on p1.prof2=p.prof2

--96. Display the total sales value of the software institute wise.

select institute, developin, s.pname, (s.scost\*s.sold) as Sales\_value from software s

join studies st on st.pname=s.pname

group by developin, institute, s.pname, (s.scost\*s.sold)

order by institute

--97. In which institute does the person who developed the costliest package study?

select top 1 institute, st.pname, (s.scost+s.dcost) as Package\_cost from studies st

join software s on s.pname=st.pname

order by (s.scost+s.dcost) desc

--98. Which language listed in Prof1, Prof2 has not been used to develop any package?

with known\_lang as (select prof1 as lang from programmer union select prof2 from programmer), used\_lang as (select distinct developin as lang from software)

select lang from known\_lang where lang not in (select lang from used\_lang)

--99. How much does the person who developed the highest selling package earn and what course did he/she undergo?

select st.pname, st.course from studies st

join software s

on s.pname=st.pname

where (select top 1 pname from software order by (scost\*sold) desc) = st.pname

--100. What is the average salary for those whose software sales is more than 50,000?

select avg(salary) as AVG\_Salary from Programmer p

join Software s

on s.PNAME=p.PNAME

where (scost\*sold)>50000

--101. How many packages were developed by students who studied in institutes that charge the lowest course fee?

select sum(s.sold) as total\_pack from Software s

join Studies st

on st.PNAME=s.PNAME

where st.INSTITUTE=(select top 1 INSTITUTE from Studies order by COURSE\_FEE asc)

--102. How many packages were developed by the person who developed the cheapest package? Where did he/she study?

select st.institute, s.sold from Software s

join Studies st

on st.PNAME=s.PNAME

where (s.SCOST+s.DCOST) = (select top 1 (SCOST+DCOST) from Software order by (SCOST+DCOST) asc)

--103. How many packages were developed by female programmers earning more than the highest paid male programmer?

select sum(s.sold) as Total\_pack from Software s

join Programmer p

on p.PNAME=s.PNAME

where GENDER='f' and

SALARY>(select top 1 SALARY from Programmer where GENDER='m' order by SALARY desc)

--104. How many packages are developed by the most experienced programmers from BDPS?

select sum(s.sold) as total\_pack from Software s

join Programmer p

on p.PNAME=s.PNAME

where p.PNAME=(select top 1 p.PNAME from Programmer p

join Studies st

on st.PNAME=p.PNAME

where INSTITUTE='BDPS'

order by DOJ desc)

--105. List the programmers (from the software table) and the institutes they studied at.

select distinct s.pname, st.institute from Software s

join Studies st

on st.PNAME=s.PNAME

--106. List each PROF with the number of programmers having that PROF and the number of the packages in that PROF.

select

p.Prof,

count(distinct s.pname) as No\_Programmers,

sum(s.sold) as Total\_Packages

from

(select prof1 as Prof from Programmer

union

select prof2 from Programmer) as p

left join Software s on s.developin = p.Prof

group by p.Prof;

select prof, count(distinct s.pname) as No\_Programmers, sum(s.sold) as Total\_Packages from (select prof1 as Prof from Programmer union (select PROF2 from programmer)) as p

join Software s

on s.DEVELOPIN=p.Prof

group by Prof

--107. List the programmer names (from the programmer table) and the number of packages each has developed.

select p.pname, sum(s.sold) as Total\_Packages from Programmer p

left join Software s

on s.PNAME=p.PNAME

group by p.PNAME

--